



Achieve

math

works

$$\cos^{-1} \theta \quad \sqrt{a^2 + b^2} \quad e^{i\theta}$$
$$\Delta y \quad \partial^2 \Omega \quad \sin^{-1} \theta$$

Exposing the Myth: Advanced Math Does Not Increase Drop Out Rates

A common argument against raising math course-taking requirements for all students is that it will cause more students to drop out of high school. This argument fails to take into account the fact that most students who drop out for academic reasons do so not because they are being “too challenged,” but rather because they are not being challenged enough. It is important to raise the rigor and relevance of mathematics courses to keep students engaged and on track to graduation and postsecondary success.

Students do not feel motivated, particularly when enrolled in low-level courses

- In a survey of high school dropouts, 69 percent say they were not motivated or inspired to work hard and two-thirds report that they would have worked harder if more was demanded of them (such as higher academic standards or more studying and homework). In total, 70 percent were confident they could have graduated if they had tried.¹
- More dropouts report that they left high school because their classes weren't interesting than because they were actually failing those classes. In fact, 90 percent said they had passing grades when they dropped out.²
- One-fifth of high school seniors explicitly say they wish their schools had done a better job preparing them in mathematics.³

Students are willing to work harder – but only if they are challenged.

- Nine out of ten high school students say that if their high schools set higher academic standards and raised expectations, they would work harder. This is critical considering only 31 percent of students say that the expectations are “high” and that they are “significantly challenged.”⁴
- When asked about what would improve their schools, 91 percent of high school students reported that providing opportunities to take more challenging courses would be an improvement. Another 75 percent said requiring four years of math, including Algebra II, and courses in biology, chemistry and physics would also lead to improvement.⁵

In 1998, San Jose Unified District became the first district in California to require its high school graduates to fulfill the University of California's minimum subject-area requirements for freshman admission—a series of core academic courses and electives known as the “A-G” curriculum. As of 2007, the high school graduation rate *increased* to 86% and 66% of San Jose's graduates had passed every one of the courses required for entrance into the University of California and California State University systems with a C or better. 50% of San Jose's Hispanic students graduated university eligible compared to 25% statewide.

$$[X_i - \bar{X}]^2 \partial^2 \Omega$$

- Students enrolled in a college-prep curriculum demonstrate higher achievement gains than those enrolled in low-level courses—including students in the lowest performance quartiles. Students who scored in the lowest quartile in 8th grade math and took a college-prep curriculum demonstrated gains of 28 points through 12th grade, compared to students in a general track, who only showed gains of 21 points from 8th to 12th grade on average.⁶

More rigorous graduation requirements – including more higher-level math courses – are not tied to higher drop out rates

- Rather than low-level math helping to raise graduation rates, for every two additional math courses offered at their high schools *below* the level of algebra, students experienced more than a 28 percent *increase* in their odds of dropping out, while students who attended high schools that offered calculus exhibited a 56 decrease in their odds of dropping out. According to the studies' authors, "This finding flies in the face of those who say that high schools must offer a large number of undemanding courses to keep uncommitted students in school."⁷
- A study examining state graduation requirement policies to determine whether states that require students to complete more academic courses have higher dropout rates found that tougher graduation requirements have no statistically significant impact overall, and a slight negative impact for high-poverty students—meaning that more rigorous course requirements actually *lowered* the drop out rate for disadvantaged students by about 2 percent.⁸
- As states and districts raise the rigor of their high school graduation requirements, they must also ensure students receive the necessary preparation and support well before they enter high school. 45 percent of dropouts say they started high school poorly prepared by their earlier schooling. Many of these students likely fell behind in elementary and middle school and had difficulty making up the necessary ground.⁹

ENDNOTES

1 Bridgeland, John et al (2006). *The Silent Epidemic: Perspectives of High School Dropouts*. A report by Civic Enterprises with Peter D. Hart Associates for the Bill & Melinda Gates Foundation. http://www.silentepidemic.org/~media/Files/Resources/the_silent_epidemic_report-RES.ashx

2 *ibid*

3 Horatio Alger Association of Distinguished Americans (2005). *The State of Our Nation's Youth: 2005-06*. <http://www.horatioalger.com/pdfs/O506SONY.pdf>

4 *ibid*

5 *ibid*

6 Levesque, Karen et al (2000). *Vocational Education in the United States: Toward the Year 2000*. National Center for Education Statistics.

7 Lee, V. E. & Bukam, D. T. (2003). *Dropping Out of High School: The Role of School Organization and Structure*. American Educational Research Journal, 40(2), 353-393.

8 Bishop, John H. and Ferran Mane. *Educational Reform and Disadvantaged Students: Are They Better Off or Worse Off?* Center for Advanced Human Resource Studies: working paper series, 2004. http://www.silentepidemic.org/~media/Files/Resources/the_silent_epidemic_report-RES.ashx

9 Bridgeland, John et al (2006). *The Silent Epidemic: Perspectives of High School Dropouts*. A report by Civic Enterprises with Peter D. Hart Associates for the Bill & Melinda Gates Foundation. http://www.silentepidemic.org/~media/Files/Resources/the_silent_epidemic_report-RES.ashx